

REMARKS

Favorable reconsideration of this application, in light of the following discussion and in view of the present amendment, is respectfully requested.

Claims 1-23 are pending.

I. Rejection under 35 U.S.C. § 103

In the Office Action, at page 5, numbered paragraph 5, claims 1-23 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 4,787,076 to Deguchi et al. in view of the "Admitted Art". This rejection is respectfully traversed because Deguchi and the "Admitted Art" do not suggest:

- a high-pass filter which removes an AC component from the SPP signal such that only DC components of the SPP signal remain;
and

- a subtractor which generates a tracking error signal by calculating a difference between the MPP signal and the DC components of the SPP signal,

- wherein the high-pass filter is connected in series between an output terminal of the side beam push pull signal generating unit and a ground terminal,

as recited in independent claims 1 and 11.

Although for the newly amended independent claims 1 and 11, which recite "the high-pass filter is connected in series between an output terminal of the side beam push pull signal generating unit and a ground terminal," the Examiner has not taken Official Notice, if the Examiner construes that the Examiner has taken Official Notice of a high-pass filter that is connected in series between an output terminal of a side beam push pull signal generating unit and a ground terminal and that removes an AC component from the SPP signal such that only DC components of the SPP signal remain, the Applicants explicitly traverse any taking of Official Notice. In addition, the noticed fact is not considered to be common knowledge or well-known in the art because conventionally, a change in a disc track pitch results in a change in the amplitude of an AC component waveform of an SPP signal, thereby preventing stable generation of a DPP signal. However, because AC components are removed from the SPP signal in the present invention, as a result, a DPP signal can be stably generated regardless of a disc track pitch. Thus, the filter 703 is designed to have high-pass filtering characteristics and removes the AC components from the SPP signal. However, the filter 703 is also designed to have low-pass filtering characteristics because the filter 703 is positioned in series between an

output terminal of the side beam push pull signal generating unit and a ground terminal, where the filter 703 is connected to the subtractor 704 and provides the subtractor 704 with the SPP signal having AC components removed therefrom.

The high pass filter of the present invention of claim 1, for example, removes an AC component from an SPP signal so that only DC components remain in the SPP signal. The Examiner alleges that Deguchi discloses "a low-pass filter which removes AC components from the SPP signal." The Applicants disagree.

In Deguchi, as discussed at col. 4, lines 49-51, a low pass filter 18 extracts a low frequency component from a main beam tracking error signal. The low pass filter 109 also extracts only a low frequency component.

However, the high pass filter recited in independent claim 1, for example, removes the AC component from an input signal and transmits only the DC components in the input signal, whereas the low pass filter disclosed in Deguchi extracts the low frequency component. The low pass filter in Deguchi does not extract only the DC components as recited in claim 1, for example, but extracts only the low frequency component.

Accordingly, the high pass filter of claim 1 is distinct from the low pass filter of Deguchi.

Further, the Examiner concedes that Deguchi does not disclose a high-pass filter which removes an AC component from the SPP signal such that only DC components of the SPP signal remain, wherein the high-pass filter is connected to the terminal of the side beam push pull signal generating unit to ground. The Examiner indicates that the Related Art makes up for the deficiencies in Deguchi. The Applicants respectfully disagree.

The Examiner took Official Notice that "providing a low-pass filter in series with a signal output results in the equivalent frequency response as connecting a high-pass filter to ground at the signal output." The Examiner then failed to provide documentary evidence of such, despite the fact that "[o]fficial notice without documentary evidence to support an examiner's conclusion is permissible only in some circumstances. While 'official notice' may be relied on, these circumstances should be rare when an application is under final rejection or action under 37 CFR 1.113." See M.P.E.P. § 2144.03.

However, although the Applicants strongly disagree that the Examiner's statement should be construed to be Admitted Art, the Applicants will proceed with the Examiner's argument that the Applicants have admitted that "providing a low-pass filter in series with a

signal output results in the equivalent frequency response as connecting a high-pass filter to ground at the signal output.”

The Examiner alleges that “[i]t would have been an obvious matter of design choice to provide a high-pass filter to ground versus having a low-pass filter in series with the SPP signal since the applicant has not disclosed that a high-pass filter solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with a low-pass filter in series.”

With regard to “an obvious matter of design choice,” M.P.E.P. § 2144.04(VI)(C) states that “[t]he mere fact that a worker in the art could rearrange the parts of the reference device to meet the terms of the claims on appeal is not by itself sufficient to support a finding of obviousness. The prior art must provide a motivation or reason for the worker in the art, without the benefit of appellant's specification, to make the necessary changes in the reference device [emphasis added].” *Ex parte Chicago Rawhide Mfg. Co.*, 223 USPQ 351, 353 (Bd. Pat. App. & Inter. 1984).

The “motivation” or “reason” of “...since the applicant has not disclosed that a high-pass filter solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with a low-pass filter in series” is not a motivation or reason to modify Deguchi. The Examiner fails to articulate why it would be beneficial for the low pass filter 109 of Deguchi to be connected in series between an output terminal of a side beam push pull signal generating unit and a ground terminal. The Examiner fails to provide a reason why the low pass filter 109 of Deguchi would be replaced with a high-pass filter connected in series with an output terminal of a signal generating unit and a ground terminal. Additionally, the Examiner fail to assert how a high pass filter would replace the low pass filter 109 of Deguchi when the low pass filter 109 of Deguchi does not remove an AC component of the signal and transmit only DC components.

Further, the Examiner’s only “motivation” is merely that the Applicant fails to discuss why a high-pass filter connected in series between an output terminal of the side beam push pull signal generating unit and a ground terminal, where the high-pass filter removes an AC component from the SPP signal such that only DC components of the SPP signal remain would not be an obvious matter of design choice because the arrangement does not solve a stated problem.

To that, the Applicant disagrees. As discussed multiple times, the arrangement of a high-pass filter in series between an output terminal of a side beam push pull signal generating

unit and a ground terminal, where the high-pass filter removes an AC component from the SPP signal such that only DC components of the SPP signal remain, is not an obvious matter of design choice because the arrangement does solve a stated problem.

At paragraphs 0012 and 0015 of the present disclosure, one of the problems to be solved is that a change in a disc track pitch makes it difficult to precisely match the phases of an MPP and an SPP signal, thereby preventing stable generation of the DPP signal. To solve this problem, as discussed at paragraph 0016 of the present disclosure, Korean Laid-Open Patent Pub. No. 2002-42200 suggests compensating for a difference between the phases of a MPP signal and a SPP signal by changing a gain value k. However, for the compensation, both a circuit that detects a phase difference between the MPP signal and the SPP signal and a circuit that changes a gain value k based on the detected phase difference are required to be additionally installed in an optical recording/reproducing system. The installation of these circuits, however, complicates a circuit structure of the optical recording/reproducing system and increases manufacturing costs.

Thus, as discussed in paragraph 0017 of the present disclosure, the present invention provides an apparatus and method for stably generating a tracking error signal (or a DPP signal) irrespective of a change in a disc track pitch without complicating the structure of an optical recording/reproducing system, thereby performing a stable servo control.

Further, as discussed in paragraph 0045 of the present disclosure, conventionally, a change in a disc track pitch results in a change in the amplitude of an AC component waveform of an SPP signal, thereby preventing stable generation of a DPP signal. However, according to the embodiment of the present invention, AC components are removed from the SPP signal and, as a result, a DPP signal can be stably generated regardless of a disc track pitch. Thus, as discussed in paragraph 0048, a filter is built in a tracking error signal generating circuit that generates a tracking error signal using a DPP method so as to remove AC components from an SPP signal. Therefore, a tracking error signal can be stably generated regardless of a disc track pitch.

Thus, the benefit in having a high-pass filter which removes AC components from the SPP signal such that only DC components of the SPP signal remain, as opposed to having only a low-pass filter in which only low frequency components are extracted, as in Deguchi, is because removing the AC component from the SPP signal allows for a DPP signal to be stably generated regardless of a disc track pitch. Therefore, utilizing a high-pass filter in such an arrangement solves the problem of (a) unstable generation of the DPP signal and (b) minimizing

the complication of the structure. Therefore, it would not have been an "obvious matter of design choice" to replace the low pass filter 109 of Deguchi with a high pass filter that removes an AC component because if a high pass filter is instead used, then the DPP signal can be stably generated regardless of a disc track pitch. Also, utilizing only one filter to generate the DPP signal results in a less expensive and less complicated structure. Further, the low pass filter 109 of Deguchi does not remove an AC component such that only DC components remain, but instead removes only a low frequency component.

Therefore, as the combination of Deguchi and Official Notice does not suggest all the features of amended independent claims 1 and 11, claims 1 and 11 patentably distinguish over the references relied upon. Accordingly, withdrawal of the §103(a) rejection is respectfully requested.

Further, the combination of Deguchi and Official Notice does not suggest "calculating a difference between an MPP signal and an SPP signal whose AC components are removed via a high-pass filter such that only DC components of the SPP signal remain,... wherein the high-pass filter is connected in series between an output terminal of a generator of the SPP signal and a ground terminal," as recited in independent claims 4 and 10. Therefore, claims 4 and 10 patentably distinguish over the references relied upon. Accordingly, withdrawal of the §103(a) rejection is respectfully requested.

Also, the combination of Deguchi and Official Notice does not suggest "a high-pass filter which removes AC components from the SPP signal such that only DC components of the SPP signal remain, the AC components being removed before the signal is received by the tracking error signal generating unit;... wherein the high-pass filter is connected in series between an output terminal of a generator of the SPP signal and a ground terminal," as recited in independent claim 7. Therefore, claim 7 patentably distinguishes over the references relied upon. Accordingly, withdrawal of the §103(a) rejection is respectfully requested.

In addition, the combination of Deguchi and Official Notice does not suggest "removing an AC component from the SPP signal via a high-pass filter such that only DC components of the SPP signal remain; and generating a tracking error signal based on a difference between the MPP signal and the DC components of the SPP signal, wherein the high-pass filter is connected in series between an output terminal of a generator of the SPP signal and a ground terminal," as recited in independent claims 14 and 17. Therefore, claims 14 and 17 patentably distinguish over the references relied upon. Accordingly, withdrawal of the §103(a) rejection is respectfully requested.

Additionally, the combination of Deguchi and Official Notice does not suggest “a high-pass filter which removes AC components from the SPP signal such that only DC components of the SPP signal remain, the AC components being removed before the signal is received by the tracking error signal generating unit;...wherein the SPP signal is generated based on a difference between one of a third sum signal representing the sum of signals output from the main photodetecting portions which are diagonally disposed with respect to the track in a first direction and a fourth sum signal representing the sum of signals output by the main photodetecting portions diagonally disposed with respect to the track in a second direction normal to the first and a fifth signal output by a first side photodetector and a sixth signal output by a second side photodetector, and wherein the high-pass filter is connected in series between an output terminal of a generator of the SPP signal and a ground terminal,” as recited in independent claim 20. Therefore, claim 20 patentably distinguishes over the references relied upon. Accordingly, withdrawal of the §103(a) rejection is respectfully requested.

Also, the combination of Deguchi and Official Notice does not suggest “a high-pass AC component remover which removes an AC component from a side beam push pull (SPP) signal such that only DC components of the SPP signal remain,...wherein the tracking error signal can be stably generated regardless of a disc track pitch, and wherein the high-pass AC component remover is connected in series between an output terminal of a generator of the SPP signal and a ground terminal,” as recited in independent claim 23. Therefore, claim 23 patentably distinguishes over the references relied upon. Accordingly, withdrawal of the §103(a) rejection is respectfully requested.

Claims 2, 3, 5, 6, 8, 9, 12, 13, 15, 16, 18, 19, 21 and 22 depend either directly or indirectly from independent claims 1, 4, 7, 11, 14, 17 and 20 and include all the features of their respective independent claims, plus additional features that are not discussed or suggested by the references relied upon. For example, claim 12 recites that “the main photodetecting portions are positioned at four quadrants of a photodetector in a clockwise direction and the main photodetecting portions on the first side of the track are symmetrically arranged with the main photodetecting portions on the opposing side of the track.” Therefore, claims 2, 3, 5, 6, 8, 9, 12, 13, 15, 16, 18, 19, 21 and 22 patentably distinguish over the references relied upon for at least the reasons noted above. Accordingly, withdrawal of the §103(a) rejection is respectfully requested.

Conclusion

In accordance with the foregoing, claims 1-23 are pending and under consideration.

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

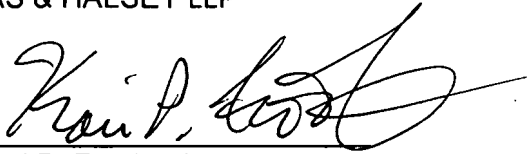
Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

STAAS & HALSEY LLP

Date: January 22 2009

By: 

Kari P. Footland
Registration No. 55,187

1201 New York Avenue, N.W., 7th Floor
Washington, D.C. 20005
Telephone: (202) 434-1500
Facsimile: (202) 434-1501